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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/074,199

02/12/2002

Lars Thylen

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7590

03/11/2004

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EXAMINER

JEAN PIERRE, PEGUY

ART UNIT

PAPER NUMBER

2819

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/074,199

Applicant(s)

THYLEN ET AL.

Examiner

Peguy JeanPierre

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 030504.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed on 7/10/2002 has been considered.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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6. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watterson et al. (USP 6,526,079) in view of Toughlian et al. (USP6,420,985).

Watterson et al. disclose in Figure 1 an opto-electronic method of converting an analog input signal to a digital signal that comprises the steps of modulating a narrowband electromagnetic beam based on the amplitude of the analog signal (see col. 6, lines 1-2), transforming the wavelength modulated beam into angular modulated beam and diffracting modulated beam into a bundle of diffracted beams (see col. 6, lines 10-14). The system also comprises photo detectors that are coupled to receive the power distribution of the wavelength and to generate a digital data stream (see col. 6, lines 38-48). Watterson et al. fail to teach the determining of the digital signal is done by repeatedly sample the spatial power distribution, the digital signal in Gray coded format, the modulating means is a tunable laser, an array of waveguide.

Toughlian et al. disclose in Figure 1 an optical analog to digital converter that comprises a tunable laser that receives analog input signal to modulated wavelength signal (λ_1 - λ_N) where N represent the resolution of the converter, to be delivered to a plurality of photo detectors. The photo detectors convert the wave length into binary or Gray coded binary count (see column 3 Table 1 and lines 38-45). Toughlian et al also disclose the possibility of transforming of the wavelength into an array waveguide using a particular filter (see col.5, lines 62-63). The converter of Toughlian et al. will increase the processing speed of the converter. Therefore, it would have been obvious to one having ordinary skill in the art to modulate the analog input signal of Watterson et al. by using the tunable filter as taught by Toughlian for the benefit to simultaneously provide an


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accurate opto analog to digital converter having real-time high speed applications. It would have been further obvious to implement an array of waveguide to eliminate the need of for amplitude weighting and thereby easing the fabrication of the converter. Though Waterson et al. do not explicitly teach the sampling of the power distribution repeatedly, it is well known in the art of analog to digital converter to timely and repeatedly sample the analog input signal regardless of its power and magnitude to reduce aliasing errors and thereby increasing the accuracy of the converter.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lewis et al. (USP 6,661,361), Robertson (USP 6,420,984), Weimer et al. (USP 6,409,198), Takahashi (USP 5,638,353), Moritomo (USP 5,459,707) disclose opto analog to digital converters.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peguy JeanPierre whose telephone number is (571) 272-1803. The examiner fax phone number is (571) 273-1803.


Peguy JeanPierre
Primary Examiner